

Serial No.: 10/720,173  
Docket No.: 102-1003  
Amendment dated March 16, 2006  
Reply to the Office Action of December 16, 2005

## **REMARKS**

### **Introduction**

Applicant notes with appreciation the Examiner's indication that claims 3, 5, 7, 12-18, 21-23 and 26-30 would be allowable if rewritten in independent form.

Upon entry of the foregoing amendment, claims 1-31 are pending in this application. Claim 11 has been amended. New claim 31 has been added. No new matter is being presented. In view of the following remarks, reconsideration and allowance of all the pending claims are requested.

### **Objections**

#### **Claim 11**

The Examiner has objected to claim 11 as containing minor informalities. Applicant has amended claim 11 according to the Examiner's suggestion. Accordingly, Applicant respectfully requests that the Examiner withdraw the objection to claim 11.

### **Rejection under 35 USC §102**

Claims 1, 4, 6, 8 and 24-25 have been rejected under 35 U.S.C. §102(e) as being anticipated by the admitted prior art shown in FIGS. 1 to 4 and described in paragraphs [0003] to [0025] of the present application. Applicant traverses this rejection for at least the following reasons.

#### **Claims 1 and 4**

At page 2 of the Office Action of December 16, 2005, the Examiner takes the position that the

"admitted prior art discloses...a transient time extending part provided with at least one time extending element to extend by a predetermined time a transient time during which

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the potential level of the signal inputted from the level converter to the switching unit is converted from a first signal level to a second signal level and vice versa (figure 1, reference 150; while it is appreciated that the admitted prior art does not include a transient time 'extending part' as characterized later by applicant's specified invention, the examiner considers that the claimed invention here is sufficiently broad to be able to be read on by the disclosure of the admitted prior art in paragraph 0012 of the specification. In such a broad recitation, **the delay of the output voltage of the level converter is seen to correspond to a transient time extension...**" (emphasis added).

Thus, the Examiner apparently equates the propagation delay induced by the level converter 142 of the admitted prior art as shown in FIGS. 1 and 2 with an increase in transient time of the level shift unit 140. However, while the level converter 142 of the admitted prior art affects the propagation delay (i.e., an amount of time required for a signal to travel or propagate through the level shift unit 140 from input to output), the level converter 142 of the admitted prior art does not "extend by a predetermined time a transient time..." of the level shift unit 140, as recited in independent claim 1 of Applicant's invention.

Applicant respectfully submits that "a transient time" as recited in independent claim 1 is not equivalent to a propagation delay of the logic unit of the admitted prior art, since the transient time typically measures an amount of time taken to change between output levels (e.g., logic high and logic low) whereas the propagation delay of the admitted prior art simply measures the amount of time it takes for a signal to pass through the logic unit from an input of the logic unit to an output of the logic unit.

More specifically, the level converter 142 extends the propagation delay of a signal passing through the level shift unit 140 of the admitted prior art, since the signal must pass through the logic of the level converter 142. See FIG.2 of the admitted prior art. However, the level converter 142 does not necessarily extend the amount of time it takes the level shift unit 140 to change between output levels. If the transient time (e.g., rise time and/or fall time) of the level shift unit 140 is a certain value without the level converter 142, adding the level converter 142 to the level shift unit 140 would not "extend by a predetermined time a transient time during which the potential level of the signal inputted from the level converter to the switching unit is converted from a first signal level to a second signal level and vice versa," as recited in independent claim 1.

In other words, regardless of the fact that additional logic such as the level converter 142

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would add to a propagation delay of the level shift unit 140, it would still take the level shift unit 140 the same amount of time to change between output levels (i.e., logic high and logic low). The additional logic would simply delay the actual change between a first output level and a second output level with respect to a point in time at which an input signal is received at the level shift unit 140. The amount of time it takes the level shift unit 140 to change between the first output level and the second output level would not be affected, because the output of the level shift unit 140 would simply remain at the first output level for an additional amount of time that corresponds to the propagation delay attributable to the level converter 142, before beginning to change to the second output level.

Thus, Applicant respectfully submits that the level converter 142 of the admitted prior art is not the same as "a time extending part," as recited in independent claim 1, because the level converter 142 does not include "at least one time extending element to extend by a predetermined time a transient time during which the potential level of the signal inputted from the level converter to the switching unit is converted from a first signal level to a second signal level and vice versa." Accordingly, Applicant respectfully submits that the admitted prior art does not disclose each of the features as recited in independent claim 1.

"A claim is anticipated only if each and every element as set forth in the claim is found, either expressly or inherently described, in a single prior art reference." Verdegaal Bros. v. Union Oil Co. of California, 814 F.2d 628, 631, 2 USPQ2d 1051, 1053 (Fed. Cir. 1987). The identical invention must be shown in as complete detail as contained in the...claim." Richardson v. Suzuki Motor Co., 868 F.2d 1226, 1236, 9 USPQ2d 1913, 1920 (Fed. Cir. 1989). "The elements must be arranged as required by the claim..." In re Bond, 910 F.2d 831, 15 USPQ2d 1566 (Fed. Cir. 1990). Further, in the event that the Office Action is relying on the theory of inherency in any manner, "the Examiner must provide a basis in fact and/or technical reasoning to reasonably support the determination that the allegedly inherent characteristic necessarily flows from the teachings of the applied art." Ex parte Levy, 17 USPQ2d 1461, 1464 (Bd. Pat. App. & Inter. 1990) (emphasis in original). See also MPEP 2112. Accordingly, since the admitted prior art does not explicitly or inherently teach every element as recited in independent claim 1, the admitted prior art cannot be properly used to reject independent claim 1 under 35 U.S.C. § 102. Therefore, it is respectfully submitted that independent claim 1 is

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allowable over the admitted prior art, and withdrawal of this rejection and allowance of this claim are earnestly solicited.

Regarding claim 4, it is respectfully submitted that for at least the reason that claim 4 depends from independent claim 1, and therefore contains each of the features as recited in this claim, claim 4 is therefore also patentable over the admitted prior art, and withdrawal of the rejection of this claim and allowance thereof are earnestly solicited.

#### Claim 6

Independent claim 6 recites similar features as those recited in independent claim 1 which, as pointed out above, are not disclosed by the admitted prior art. For example, independent claim 6 recites, *inter alia*, "extending a transient time by a predetermined time in accordance with an output signal generating when the level of the inputted signal is converted, the transient time being a time period during which the level is converted from a first signal level to a second signal level and vice versa." As set forth above, neither the level converter 142 nor any part of the level shift unit 140 extends the "transient time" thereof. Accordingly, for at least the reasons set forth above in the discussion of independent claim 1, Applicant respectfully submits that independent claim 6 is patentable over the admitted prior art.

#### Claim 8

Independent claim 8 recites similar features as those recited in independent claim 1 which, as pointed out above, are not disclosed by the admitted prior art. For example, independent claim 8 recites, *inter alia*, "a level shift unit generating a first nozzle selection signal having a first transient time, during which a level of the first nozzle selection signal is changed between first and second levels, in response to the control nozzle selection signal, and generating a second nozzle selection signal having a second transient time extended by a period from the first transient time." As set forth above, neither the level converter 142 nor any part of the level shift unit 140 extends the "transient time" thereof. Accordingly, for at least the reasons set forth above in the discussion of independent claim 1, Applicant respectfully submits that independent claim 8 is patentable over the admitted prior art.

Regarding claims 24 and 25, it is respectfully submitted that for at least the reason that

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each of claims 24 and 25 depends from independent claim 8, and therefore contain each of the features as recited in this claim, claims 24 and 25 are therefore also patentable over the admitted prior art, and withdrawal of the rejection of these claims and allowance thereof are earnestly solicited.

### **Rejection under 35 USC §103**

Claims 2, 9-11 and 19-20 have been rejected under 35 U.S.C. §103(a) as being unpatentable over the admitted prior art in view of U.S. Patent No. 6,273,537 to Hiwada. Applicant traverses this rejection for at least the following reasons.

Claims 2, 9-11, and 19-20 depend from allowable independent claims 1 and 8, respectively, and therefore include each of the features of these claims. The Examiner acknowledges that the admitted prior art does not disclose the features of claims 2, 9-11, and 19-20. See Office Action of December 16, 2005 page 7. However, the Examiner relies on Hiwada as allegedly teaching the features that the admitted prior art lacks. See Office Action of December 16, 2005 page 7. Applicant respectfully submits that even if Hiwada does in fact teach the features of these dependent claims, as alleged by the Examiner, the admitted prior art and Hiwada, either separately or in combination with one another, fail to teach or suggest "a level shift unit having a level converter converting a potential level of a signal inputted therein into a predetermined potential level to drive the switching unit, and a transient time extending part provided with at least one time extending element to extend by a predetermined time a transient time during which the potential level of the signal inputted from the level converter to the switching unit is converted from a first signal level to a second signal level and vice versa," as recited in independent claim 1, and "a level shift unit generating a first nozzle selection signal having a first transient time, during which a level of the first nozzle selection signal is changed between first and second levels, in response to the control nozzle selection signal, and generating a second nozzle selection signal having a second transient time extended by a period from the first transient time," as recited in independent claim 8 of Applicant's invention. Accordingly, claims 2, 9-11, and 19-20 are patentable over the references relied upon by the

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Examiner at least by virtue of their dependency on independent claims 1 and 8, respectively, and withdrawal of the rejection and allowance of these claims are earnestly solicited.

**New Claim**

Claim 31 has been newly added. New claim 31 recites similar features as those recited in claims 1, 6, and 8, which as pointed out above, are not disclosed, taught, or suggested in the prior art of record, such as, for example, "a level shift unit to convert the nozzle selection signal to have a predetermined level to drive the heating element between a logic high and a logic low and having one or more logic units to increase a time required to change an output thereof between the logic high and the logic low." Applicant respectfully submits that support for newly added claim 31 can be found in FIGS. 6 and 7 and the corresponding portions of the detailed description. Accordingly, it is respectfully submitted that new claim 31 does not present new matter, and is allowable over the prior art of record, and allowance of this claim is earnestly solicited.

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### **Conclusion**


It is respectfully submitted that a full and complete response has been made to the outstanding Office Action and, as such, there being no other objections or rejections, this application is in condition for allowance, and a notice to this effect is earnestly solicited.

If the Examiner believes, for any reason, that personal communication will expedite prosecution of this application, the Examiner is invited to telephone the undersigned at the number provided below.

A \$250 fee for an additional claim has been incurred by this amendment. If any further fees are required in connection with the filing of this amendment, please charge the same to our Deposit Account No. 502827.

Respectfully submitted,

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